THE

BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. XC.] THURSDAY, MAY 21, 1874. [No. 21.

Original Communications.

THE INFLUENCE OF ANÆSTHETICS ON THE VASO-MOTOR CENTRES.*

By H. P. BOWDITCH, M.D.,

Assistant Professor of Physiology in Harvard University,

And CHARLES SEDGWICK MINOT, B.S.

THE experiments reported in this paper were undertaken with the hope of contributing to our knowledge of the physiological action of anæsthetics by investigating the effect of these agents on certain nervous processes, which find their expression in changes of the arterial blood tension. The anæsthetic used in most of the experiments was sulphuric ether, but, for the sake of comparison, experiments with chloroform were also instituted.

As far as regards their power to produce insensibility to pain, anæsthetics may be regarded as antagonizing the effects of irritation of sensitive nerves. It is interesting, therefore, to inquire how far this antagonism extends to *other* effects of the same irritation. One of the most constant physiological results of irritation of a sensitive nerve is a rise of arterial blood tension, due to a reflex stimulation, through the vaso-motor centres of the muscular walls of the smaller arteries, especially those of the intestines. This phenomenon is so constant that its occurrence has been used as a test for the integrity of sensitive nerves, and a method of investigating the course of sensitive nerve fibres in the spinal cord has been founded upon it.†

Our first object was to determine the effect of anæsthesia on this reflex rise of blood tension. Since the contraction, reflex or voluntary, of the muscles of the trunk and limbs causes great irregularities in the blood tension, the phenomenon in question can be properly observed only when the possibility of such contraction is excluded. This can be most conveniently and effectually done by paralyzing the animal with curare, and keeping up life by artificial respiration. The experiments were, therefore, performed as follows. The animal (in most cases a dog) was confined upon the operating table in a supine position, and a dose of curare (varying, with the size of the animal, from two to ten cc. of a one-half per cent. solution) was injected into the external jugular vein. As soon as the respiratory movements ceased, the trachea was connected by means of a glass canula inserted into it with the apparatus for artificial respiration, which was so adjusted as to

* Read before the Boston Society of Medical Sciences, February 24, 1874.

† Miescher. Zur Frage der sensiblen Leitung im Rückenmark. Ludwig's Arbeiten. 1870. Page 172.

imitate as closely as possible the normal respiratory rhythm. A canula was then placed in the carotid artery and connected with a mercury manometer carrying a pen, by means of which the blood tension was recorded on a long strip of paper, which was kept in uniform motion by clockwork. (The rate at which the paper moved was recorded by means of a pendulum, which broke an electrical circuit once a second, and thus, through an electro-magnet, moved a pen which wrote upon the surface of the paper.)

The saphena nerve was then exposed and placed upon electrodes connected with the secondary coil of a Du Bois-Reymond induction apparatus, the primary current of which was supplied by one Grove cell. The irritation of the nerve was produced by closing the primary circuit by means of a key provided with a pen, which also wrote upon the paper directly under the pen recording the blood tension. The duration and the effect of the irritation could therefore be seen at a glance.

After determining the effect on the blood-tension of irritation of the saphena nerve, which was invariably a rise, amounting, usually, to from thirty to sixty mm. of mercury, the tube of the respiration apparatus was connected with a bottle containing ether, in such a way that the air was forced into the lungs of the animal, mixed with the vapor of the anæsthetic. After the ether had been administered in this way for several minutes, the saphena nerve was again irritated, and the effect noted. The ether was then removed, the animal allowed to breathe pure air, and the nerve once more irritated in order to determine, by comparison with the effect of the first irritation, whether the nerve still retained its irritability. Between the periods of irritation, the nerve was removed from the electrodes and restored to its position amongst the tissues of the limb. One great obstacle to the successful performance of this experiment was the impossibility of determining when a sufficient amount of ether had been given to produce anæsthesia, and when the effects of ether had been removed by breathing pure air; for the relaxation of the muscles, the usual sign of complete anæsthesia, had already been produced by the curare. The want of constancy in the results, to be attributed, in part perhaps, to this difficulty, renders it undesirable to give minute details of the experiments. Suffice it to say that in the majority of cases the rise of blood tension consequent upon the irritation of the saphena nerve was less marked when the animal was under the influence of ether than when the anæsthetic was not used. Frequently, no great difference could be observed, and in one or two instances, especially at the beginning of the ether inhalation, the irritation of the nerve caused a more decided rise of tension than without the ether. Subsequent irritations, however, had generally a diminished effect, showing that, in this respect, the influence of ether developes itself slowly, and is, perhaps, preceded by a period of stimulation. These effects are shown by the curves represented in figures 1 to 11 inclusive.* These curves are traced directly from the records of the manometer, and, in studying them, it must be borne in mind that, owing to the mercury descending in one leg of the manometer as it rises in the other, the recorded variations of blood-tension are only one-half the absolute variations. The curves are drawn from right to left, and the horizontal lines under

* See explanation of figures at end of article.

them indicate the time during which the irritation was applied to the nerve. The numbers over the horizontal lines indicate the intensity of the irritation in arbitrary units of the Du Bois-Reymond induction apparatus,* one Grove cell supplying the electrical current. The vertical column of figures on the right of each curve is a scale giving the absolute blood-tension in millimetres of mercury.

Far more constant were the results obtained by the use of chloroform. Our experiments with this agent were not so numerous as those with ether, but the uniformity was sufficiently great to justify a conclusion as to its action. It was invariably found that, when an animal was under the influence of chloroform, irritation of the saphena nerve caused a much less marked rise of blood-tension than when the anæsthetic was not used. Sometimes there was absolutely no rise of tension to be observed, while at other times the rise was from one-third to one-half that produced by the same irritation on an animal not subjected to the action of chloroform. This effect is shown by the figures 12 to 15 inclusive, which represent the results of irritations of the saphena nerve made alternately with and without chloroform.

Now when the intensity of any reflex phenomenon is affected by the action of a drug, or any other external agency, this *may* take place in three different ways, viz.: through a change of irritability, either of the afferent or of the efferent nerves involved, or of the nervous centres through which the action takes place. It is, therefore, of interest to inquire in which of these three different possible ways chloroform diminishes the reflex contraction of the bloodvessels consequent upon the irritation of sensitive nerves. This can only be determined by experiments in which one or the other of these three possibilities can be excluded.

Now it was shown by Nawalichin† that compression of the two carotid arteries causes a great increase of blood-tension, due to an irritation of the vaso-motor centres, produced by the diminished supply of blood sent to them. Our next object was, therefore, to determine how a rise of blood-tension produced in this way is affected by chloroform inhalation. For this purpose, a dog was curarized, and kept alive by artificial respiration. The mercury manometer was connected with the crural artery, and the blood-tension recorded in the manner above described. The two carotid arteries were then exposed, and a thread placed loosely around each. At a given signal, the two threads were raised simultaneously, stopping the flow of blood through the arteries, and causing a very decided rise of blood-tension. Chloroform was then given, as in the former experiments, and the arteries again compressed. Little or no rise of blood-tension was now observed. This result is shown in figures 16 and 17, where the effects of compression of the carotids, both with and without chloroform, are given. Unfortunately, only one experiment of this sort was performed, but the result was so marked that we may fairly conclude that the rise of blood-tension due to anæmia of the vaso-motor centres may be prevented by the inhalation of chloroform. Here the effect of the anæsthetic must be to produce a diminished irritability, either of the vaso-motor centres or of the vaso-motor nerves, the third possibility above mentioned, viz., the diminished irritability of the sensitive nerves being, of course, excluded. It is, therefore, a reasonable inference,

* The maximum intensity, i.e., with coils pushed together, being indicated by 1000.
† Centralblatt für medicinische Wissenschaften. 1870. Page 483.

in those cases where chloroform was found to diminish the reflex contraction of the bloodvessels, that this effect was due not to any influence upon the sensitive nerves, but to a diminished irritability either of the vaso-motor centres or of the vaso-motor nerves. Which of these two possibilities is the more probable is a question on which the observations of Scheinesson* throw light. This observer found that, when an animal was under the influence of chloroform, no unusually strong irritation of the cervical sympathetic was necessary in order to cause a contraction of the vessels of the ear. In other words, the vaso-motor nerves had, under chloroform, preserved completely their normal functions. If, therefore, chloroform does not diminish the irritability of the vaso-motor nerves, then the effect of this anæsthetic in checking the rise of blood-tension consequent upon compression of the carotids or irritation of sensitive nerves, must be due to a diminished irritability of the vaso-motor centres.

Another very frequent, though not absolutely constant result of irritation of sensitive nerves, is a diminished frequency of the heart-beats. This diminution begins usually soon after the blood-tension has reached its maximum, and continues often 20″ or 30″ after the irritation has ceased and the blood-tension has returned to its normal level. A slight and temporary acceleration of the heart-beats, coincident with the rise of blood-tension, not infrequently precedes this retardation. That this phenomenon is due to the influence of the vagus nerves on the heart is evident from the fact that after the section of these nerves no such result is produced. This is proved by the tracings represented in figures 18 and 19, showing the effects on the blood-tension and on the rate of the heart-beats of two irritations of the saphena nerve of equal intensity, applied one before and the other after section of the vagus nerves. It will be seen that after the section, though the blood-tension rises in consequence of the irritation of the sensitive nerves, the retardation of the heart-beats is absent. This retardation must, therefore, be due to an influence proceeding from the vagus centres along the vagus nerves to the heart. Whether this stimulation of the vagus centres is a direct effect of the irritation of sensitive nerves, or an indirect effect, consequent upon the rise of blood-tension, need not at present concern us. Our next object was to determine the effect of anæsthetics on this reflex irritation of the vagus nerve. The experiments performed for this purpose were the same as those for determining the effect of anæsthetics on the reflex rise of blood-tension, for the quicksilver manometer records the heart-beats, as well as the blood-tension. It must be borne in mind, however, that the reflex rise of blood-tension is a far more constant phenomenon than the reflex retardation of the heart-beats, so that only a small proportion of the experiments made were available for the study of the latter question. The results of these experiments were not perfectly constant, but in the large majority of cases it was found that the inhalation of ether prevented the reflex retardation of the heart-beats from manifesting itself. In several cases, the irritation of the sensitive nerve caused a decided acceleration of the heart, the temporary and slight acceleration above alluded to as often occurring without ether, becoming under ether a more marked and prolonged effect. This is to be seen in Figs. 20 to 22 in-

* Centralblatt für medicinische Wissenschaften. 1869. Page 506.

clusive, showing the effect of irritation of the saphena nerve before, during and after ether inhalation.

The experiments with chloroform were not conclusive, inasmuch as the phenomenon in question did not manifest itself distinctly in the cases where this anæsthetic was employed.

Our experiments enabled us to study the direct effect of chloroform and ether on the normal blood-tension and pulse rate, though this was not the object with which they were undertaken. In regard to the effect on the blood-tension, a great difference was noticed in the two anæsthetics. While the inhalation of chloroform caused, invariably, a decided depression of the blood-tension, varying in the different observations from 8 to 37 mm. of mercury; ether, on the contrary, caused, in the majority of instances, a marked rise of tension, varying from 9 to 51 mm. of mercury, and in those cases where the tension seemed to be lowered by ether, this depression was never greater than 6 mm. of mercury. This same difference between the two anæsthetics was observed by the committee appointed by the Royal Medical and Chirurgical Society to inquire into the uses and the physiological, therapeutical and toxical effects of chloroform.* The conclusion of the committee, however, that the diminished blood-tension under chloroform is due to an enfeebled action of the heart, cannot be accepted as expressing the whole truth, for a lowered blood-tension may also be caused by a diminished activity of the vaso-motor centres, and the experiments of Scheinesson above referred to render it probable that chloroform acts in both of these ways.

No positive conclusions as to the effect of anæsthetics on the pulse rate can be drawn from our experiments. Chloroform caused, in some cases, an acceleration, in others a retardation of the pulse. The effect of ether was likewise variable. The recorded observations of Scheinesson and of the committee of the Medical and Chirurgical Society are also at variance with each other on this point. The question can only be settled by new investigations directed particularly to this subject.

In experiments like those above described, where the effects of successive nervous irritations are to be compared, it is, of course, of the greatest importance that the method of stimulation should be such as to secure the greatest possible uniformity. The Grove's element, and the sliding induction coil of Du Bois-Reymond, leave nothing to be desired as far as constancy and convenience in the production of electricity are concerned; but, in the application of the electrodes to the nerve, certain difficulties are met with. If the nerve is allowed to lie upon the electrodes during the interval, often several minutes in duration, between two successive irritations, there is great danger of its losing its irritability by drying and stretching. On the other hand, if the nerve is removed from the electrodes and restored to its normal position among the tissues, it is impossible to replace it upon the electrodes with perfect certainty that it rests upon them in precisely the same way as during the previous irritation. Of these two sources of error, the latter is probably the lesser, and the nerve was accordingly in our experiments always restored to its place among the tissues between each two irritations. In view, however, of the difficulties inherent in this method of experimenting, it would be unwise to regard as conclusive any results except those of the most positive kind.

* Medico-Chirurgical Transactions, vol. 47, p. 323. London. 1864.

We must, therefore, content ourselves with presenting the following conclusions, as possessing, at most, only a high degree of probability:

I. Chloroform inhalation lowers the reflex irritability of the vaso-motor centres, thus diminishing the power of an irritation of sensitive nerves to cause a rise of blood-tension.

II. Ether acts, if it acts at all, much less powerfully, in this respect, than chloroform.

In other words, while ether and chloroform resemble each other in their effect on those nervous centres whose activity is connected with the conscious perception of pain, the latter acts much more strongly than the former upon those centres which regulate the arterial blood-tension, and thus affects profoundly the conditions of animal life. Ether and chloroform are, therefore, both anæsthetics, but chloroform is, also, something more.

To complete this study of the comparative action of ether and chloroform, many other experiments are needed, both to confirm the results already reached, and to settle new questions arising in the course of the investigation. The subject would not be presented in its present imperfect form, were it not that the departure of one of us for Europe has made it necessary to interrupt, for the present, the series of experiments.

EXPLANATION OF FIGURES.

Figs. 1 to 11 inclusive show the effect of ether inhalation on the rise of blood-tension, caused by irritation of sensitive nerves.

Fig. 1, before ether inhalation.
Fig. 2, after 2′15″ ether inhalation.
Fig. 3, after 4′20″ ether inhalation.
Fig. 4, 4′40″ after removal of ether.
Fig. 5, after 5′ ether inhalation.
Fig. 6, after 8′ ether inhalation.
Fig. 7, 6′ after removal of ether.
Fig. 8, before ether inhalation.
Fig. 9, after 4′40″ ether inhalation.
Fig. 10, after 10′30″ ether inhalation.
Fig. 11, 5′40″ after removal of ether.

Figs. 12 to 15 inclusive show the effect of chloroform inhalation on the rise of blood-tension, caused by irritation of sensitive nerves.

Fig. 12, before chloroform inhalation.
Fig. 13, after 3′ chloroform inhalation.
Fig. 14, 3′45″ after removal of chloroform.
Fig. 15, after 3′30″ chloroform inhalation.

Figs. 16 and 17 show the effect of chloroform on the rise of blood-tension caused by compression of the carotid arteries.

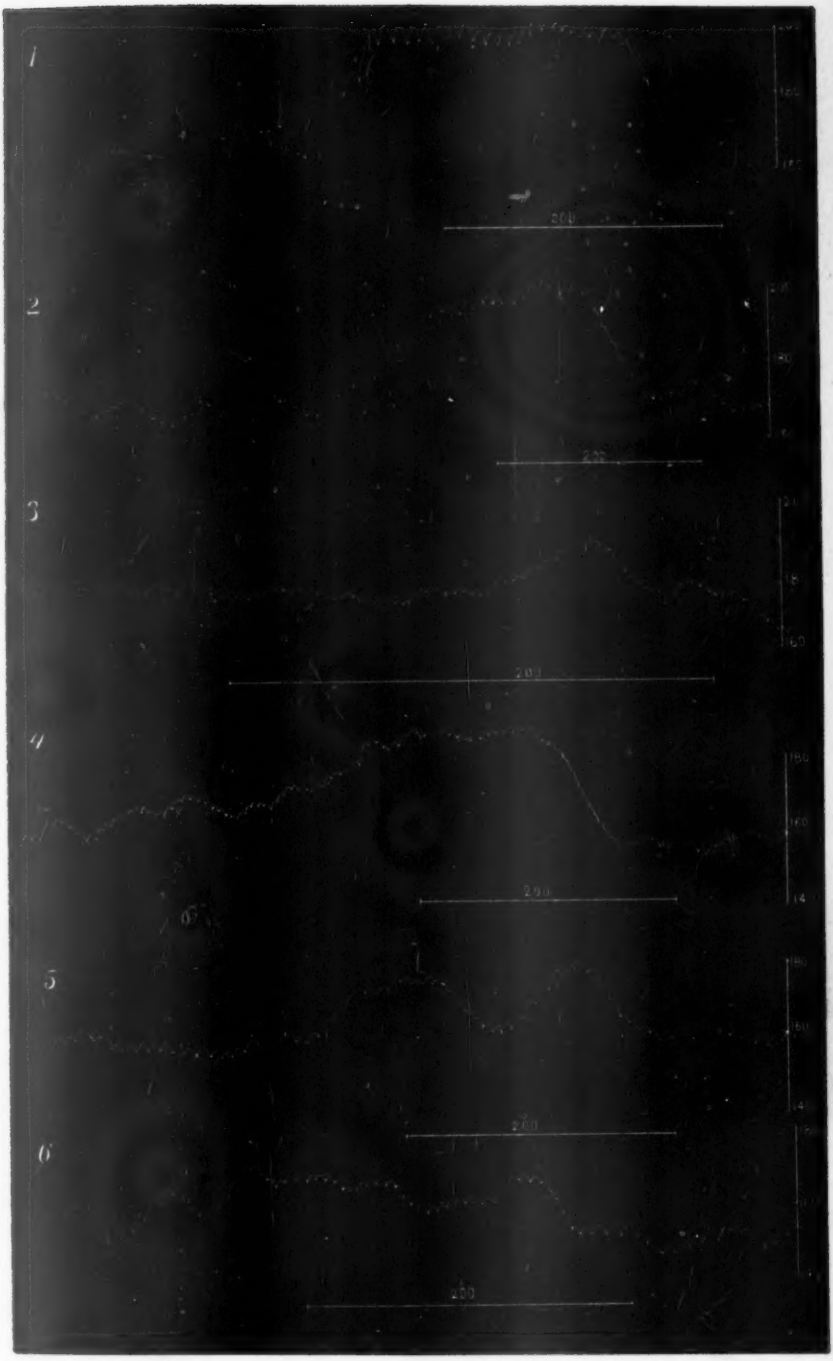
Fig. 16, without chloroform.
Fig. 17, during chloroform inhalation.

Figs. 18 and 19 show the effect of section of the vagus nerves on the changes of pulse-rate caused by irritation of sensitive nerves.

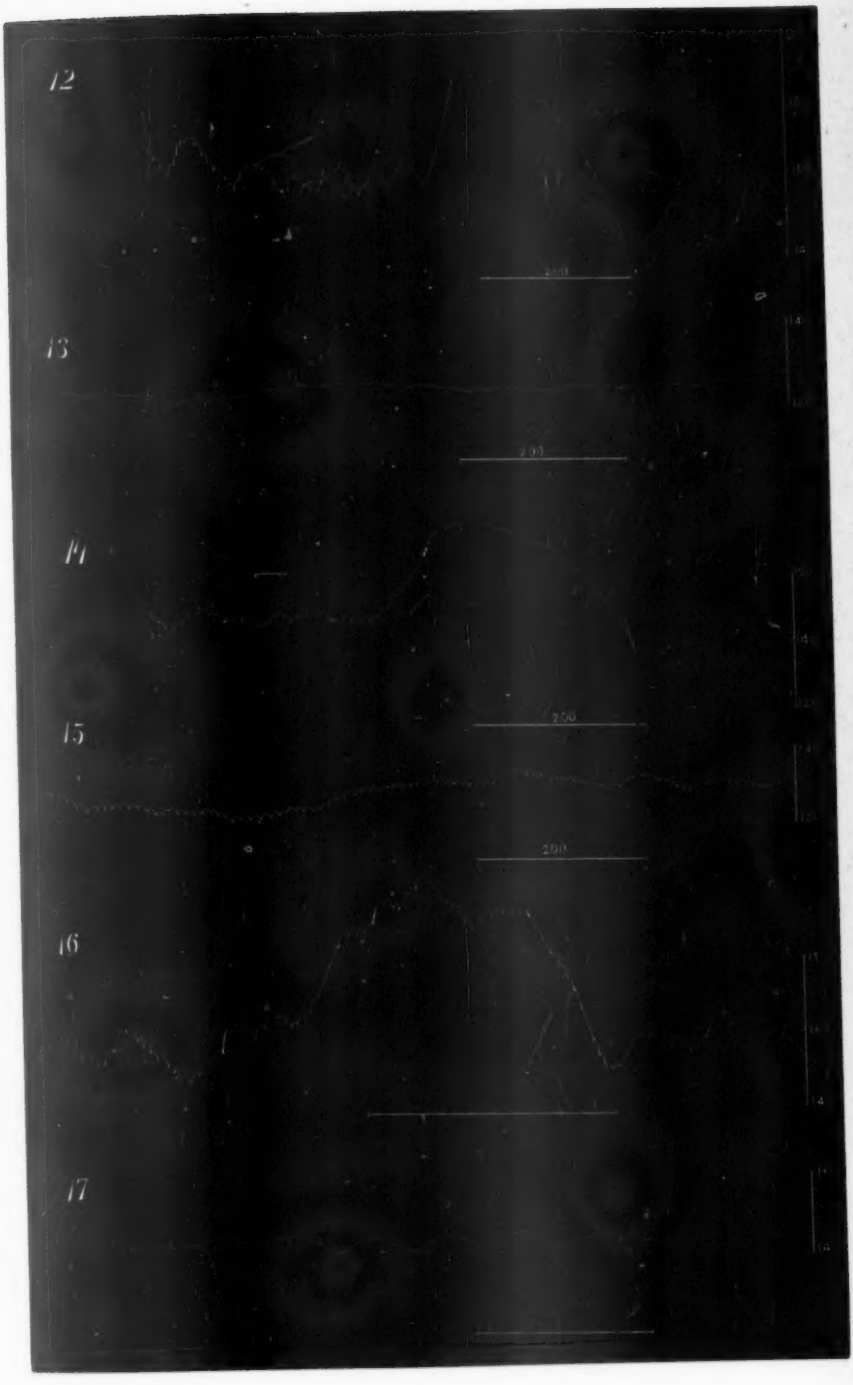
Fig. 18, before section of vagus nerves.
Fig. 19, after section of vagus nerves.

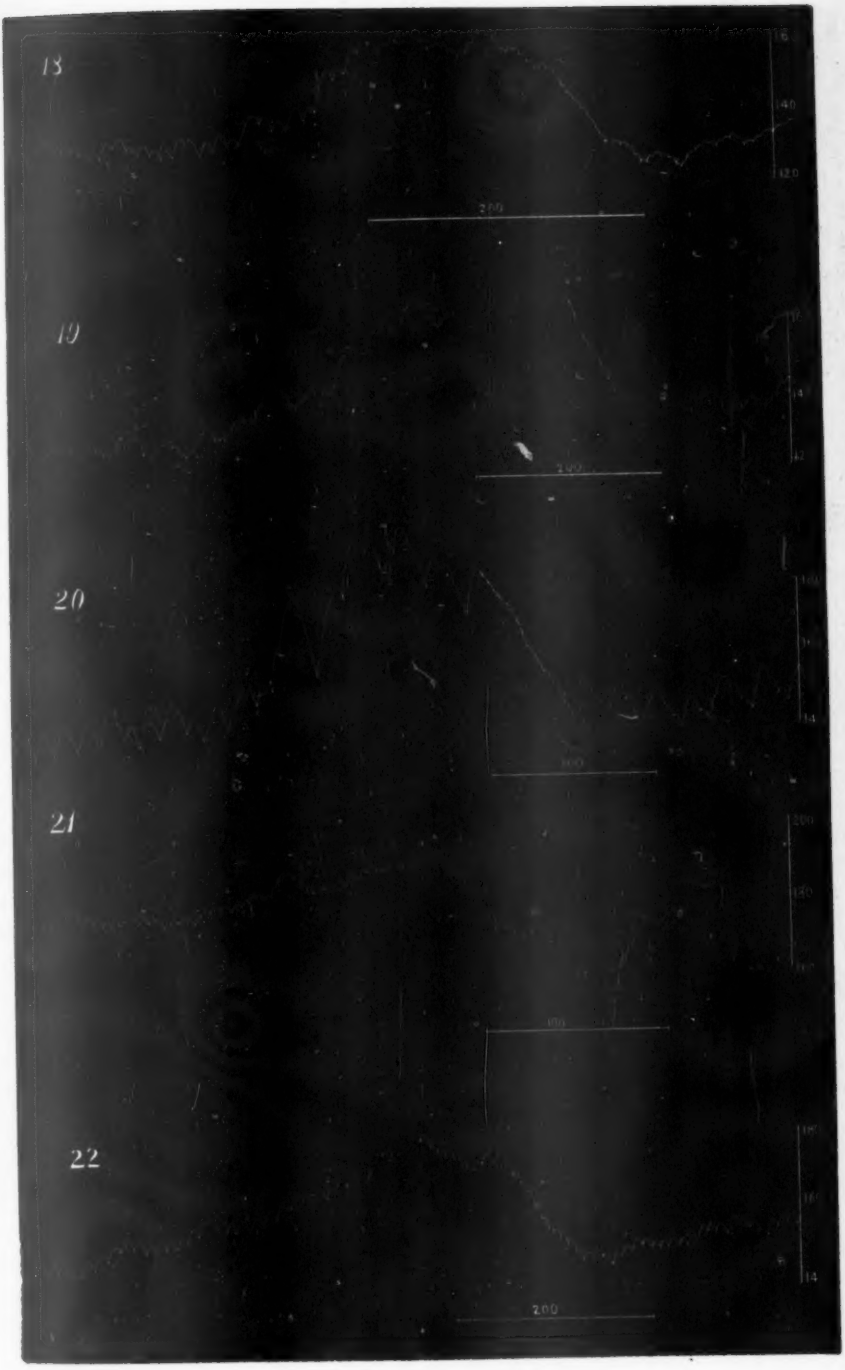
Figs. 20 to 22 inclusive show the effect of ether inhalation on the changes of pulse-rate caused by irritation of sensitive nerves.

Fig. 20, before ether inhalation.
Fig. 21, during ether inhalation.
Fig. 22, after ether inhalation.


1
2
3
4
5
6

7
8
9
10
11


12
13
14
15
16
17


18
19
20
21
22

Progress in Medicine.

REPORT ON DISEASES OF THE CHEST.

By F. I. KNIGHT, M.D.

ANGINA PECTORIS.

THIS affection has recently excited unusual interest in the profession, on account of the sudden death of a great statesman, who was known to have been a sufferer from it for a long time. It was, perhaps, rather unfortunate that the diagnosis of ossification of the coronary arteries, which the newspapers informed us so positively had been made, should have been confirmed, inasmuch as that is only one of many organic changes which have been found associated with angina pectoris. Every variety of organic disease of the heart and aorta has been found in different cases, and some cases have seemed to be purely functional. For the details of quite a large number of cases, with autopsies, the reader is referred to an exceedingly interesting paper, by Dr. J. W. Ogle, in the *British and Foreign Medico-Chirurgical Review*, Oct. 1870. Heberden, who first accurately described this affection, brought out its nervous character, calling it a cramp of the heart. Romberg calls it hyperæsthesia of the cardiac plexus; Bouillaud, neuralgia of the phrenic nerve; and Bamberger, a hypercinesis with hyperæsthesia.

Laennec thought that the primary affection is seated sometimes in the pneumogastric nerves, and sometimes in the cardiac portion of the sympathetic, and that the brachial plexus becomes implicated.

J. Lockhart Clarke (St. George's Hospital Reports, vol. iv.) says that this view of Laennec, in regard to the proximate cause of angina pectoris, has been materially supported by recent inquiries. He refers to the cases of M. Lancereaux, to the researches of Bezold, and to the article of Eulenburg and Guttmann* on the pathology of the sympathetic. In one case of Lancereaux, there was, among other lesions, disease of the cardiac plexus of nerves. The heart itself was healthy; but in the aorta, between the orifices of the coronary arteries, which were so much narrowed as scarcely to admit the introduction of a stilette, there was a prominent plate, of several centimetres in extent, festooned along its borders, and composed chiefly of a new formation of connective tissue, having a finely arborescent structure, and situated between the internal and middle coats. The external coat was extremely vascular, and the cardiac plexus, which lies on this part of the vessel, participated in the vascularity, while some of its filaments were included in a kind of plasma on the surface of the thickened, external coat. On microscopic examination of the nervous filaments and ganglia, numerous round nuclei were found interposed in masses between the tubular elements, compressing them more or less. The medullary sheaths or white portions of the tubules were grayish and granular. A calcareous mass was found close to the point of recurrence of the left inferior recurrent laryngeal nerve, where it was adherent to the neurilemma. The aortic valves were somewhat thickened near their attached border. All the abdominal organs were healthy,

* See this JOURNAL, October 13, 1870.

except the liver, which was rather fatty. In two other cases of sudden death, M. Lancereaux found a similar lesion of the aorta, having the same position and characters, and giving rise to a decided narrowing of the coronary arteries. The cardiac plexus, although not examined, was probably involved in the disease. According to Bezold, the sympathetic nerve-fibres of the heart are partly contained in the cervical cord of the sympathetic, proceeding from the ganglia as cardiac nerves, and are partly derived from the brain, running through the cervical portion of the spinal cord to the inferior cervical ganglion, whence they proceed to the cardiac plexus. Eulenburg and Guttmann conclude, from an analysis of cases, and from the experiments of Bezold, that the abnormal action of the heart in angina pectoris is due to the influence of the sympathetic on the ganglion of the heart; and as all the sympathetic fibres of the heart meet in the cardiac plexus, that this plexus is the medium through which the abnormal action is produced.

It is not difficult to imagine how organic disease of the heart may produce irritation of the cardiac plexus, or of ganglia situated in the substance of the heart; but in some cases no organic disease is found, and in some the affection seems to be a reflex one, from disease of other organs. Oppolzer had several cases of such from gastric catarrh. The attacks of angina began with heartburn and nausea, and treatment of the gastric affection cured the angina. In most organic affections of the heart, the substance of the heart itself is affected; and those who fully accept the theory that contraction of the heart is not dependent upon the pneumogastric or sympathetic, but is brought about by the cardiac ganglia, thus account for the symptoms in angina pectoris.

Moinet, especially, insists upon the separation of cases of angina pectoris into two grand classes, organic and functional.

Dr. Blatin thinks it is most probably in many cases due to the use of tobacco, and recalls, in this connection, the fact of its much more frequent occurrence in men than in women.

Dr. Stevens recorded a case in this JOURNAL, of May 30, 1872, where an attack of angina pectoris came on in consequence of disappointment in love.

In the treatment of this most distressing affection, all kinds of stimulants, sedatives, narcotics and anæsthetics have been tried. Among many remedies employed in a case of Lockhart Clarke, one of those which afforded the most relief, and which the patient desired to have repeated, was a small dose of calomel, combined with colocynth and assafœtida.

Faradization has been employed with great success in cases of Duchenne, Aran, and Beard and Rockwell. Galvanization of the sympathetic produced immediate relief in a case of Hübner's. In Dr. Stevens's case, before alluded to, relief was attributed to six leeches applied over the cardiac region.

Hydrate of chloral has been used with benefit in some cases, a notable instance of relief being reported by Dr. Strange, in the *Medical Times and Gazette* of Sept. 24, 1870. An old gentleman, very gouty, had been subject to attacks of angina pectoris every night for four months. Twenty-five or thirty grains, at first taken alone, and afterwards combined with a little sulphuric ether and aromatic spirit of ammonia, served to ward off the attack every night, when taken, for

the next four months, at the end of which time the report was made. Sometimes an extra half dose was given.

Anstie *(British Medical Journal,* Nov. 11, 1871), who advanced the theory that angina pectoris, asthma and gastralgia are all of them essentially dependent on neurosis of the vagus, recommends arsenic in their treatment. He reports two cases in which Fowler's solution, five minims three times a day, relieved the attacks of angina very rapidly, and completely removed them in the course of about a fortnight. As regards gastralgia, the efficacy of arsenic was pointed out some years ago by Dr. Learned. Dr. Anstie has, for many years, used arsenic with benefit in asthma. For those patients who cannot bear the arsenic in the doses and for the prolonged period which are necessary to make any permanent impression upon either of the three neuroses, Dr. Anstie recommends the subcutaneous injection of strychnia $\frac{1}{120}$–$\frac{1}{60}$ of a grain. He thinks there is little doubt that strychnia has a physiological affinity for the tract of the vagus and trigeminal nerves; also that this is much feebler than that of arsenic, hence he recommends the latter to be tried first.

The remedy, however, which has attracted the most attention, recently, is the nitrite of amyl. We would refer those of our readers who wish to obtain valuable information as to the physiological action of this drug to the memoir of H. C. Wood, Jr., M.D., to which was awarded the Warren prize for 1871, of the Massachusetts General Hospital, which is published in the *American Journal of the Medical Sciences* for July, 1871.

Many cases of relief from the paroxysms of angina pectoris by its use have been already reported by Brunton, Anstie, Leishman, Madden, Haddon and others. We must, however, bear in mind the fact that men habitually report their cases where favorable results of treatment are strikingly manifest, and let failures in treatment pass unrecorded. Haddon and Hilton Fagge, however, report cases where the nitrite of amyl not only did not relieve, but produced alarming symptoms.

We will first allude to some of the cases where it has given marked relief. Dr. Brunton *(Lancet,* July 27, 1867) divides cases of angina into two classes. 1. Where the pain is very severe, and comes quickly and goes quickly; 2. more common; attack sometimes gradual, and departure generally so; lasts from a few minutes to an hour and a half, or more; sense of impending dissolution less marked, or altogether absent. Dr. B.'s cases, in which relief was obtained by inhalation of nitrite of amyl, belong rather to the second class. In cases of aneurism where pain was constant, the inhalation gave no relief; but when it was spasmodic, or subject to occasional exacerbations, it either completely removed or greatly relieved it. Leishman *(Glasgow Medical Journal,* Aug., and *Practitioner,* Sept., 1869) reports instant relief from the inhalation of nitrite of amyl in a case of angina in a patient who had a dilated and atheromatous aorta (as found on autopsy). Dr. Wilks reports (*Lancet,* Jan. 16th, 1869) the case of a patient with aortic disease, in whom paroxysms of angina could be relieved, either by subcutaneous injection of morphia, inhalation of chloroform, or of nitrite of amyl, the patient himself preferring the subcutaneous injection.

Dr. H. C. Wood, Jr. *(American Journal of the Medical Sciences,*

Oct., 1871) reports a case of angina pectoris occurring in a negro woman, 21 years old, with mitral disease. The attacks were stopped almost immediately by the inhalation of nitrite of amyl. Dr. Wood says, in regard to the administration of this remedy, that five drops should be put upon a handkerchief, and held close to the nostrils, the pulse being closely watched. If necessary, the dose should be repeated. When given by the stomach (as suggested in case of tetanus), he thinks it would not be safe to start with more than two drops, until the effects of the medicine so administered have been more studied. He thinks that, with proper care, it is a safe remedy. He has never, in his experiments, seen indications of anything such as constantly happens in the use of chloroform upon dogs, sudden arrest of the heart's action, unexpected death, the mysterious production of symptoms out of proportion to the amount given.

Haddon *(Edinburgh Medical Journal*, July, 1870) reports a case where the inhalation of the nitrite of amyl gave such immediate relief to attacks of angina pectoris, that the patient, for two years, was in the habit of carrying it always with him. During life, he presented signs of aortic disease, and, on autopsy, this was found, with enlargement of the heart. The coronary vessels were natural.

Several cases are recorded in which the nitrite of amyl was administered without relief. Dr. Haddon, in connection with the case just quoted, where such striking relief was obtained, reports two other cases, where not only no relief was obtained, but what he considered alarming symptoms were produced.

One patient was 43 years of age; he had almost constant pain over the cardiac region, occasionally becoming very severe, and extending down the left arm. He presented the signs of aortic disease, with enlargement of the heart. During a severe attack of angina pectoris, in which the pulse was 80, jerking, Dr. Haddon tried the inhalation of nitrite of amyl. Three drops were put on a towel and the patient allowed to inhale, the cloth being held about two inches from his face, and occasionally removed. As he began the inhalation, the pulse lost its jerking character and became slower, in a minute so slow that Dr. Haddon thought it would stop altogther. The patient raised himself on his elbow, and, with pale face, moved himself about as if for breath. He seemed confused, and did not answer questions. Brandy was given, and a current of fresh air was made to pass over his bed. Gradually, the fulness and strength of the pulse returned, and it finally became jerking again. He had severe headache, was drowsy for an hour, then fell asleep, and, when he awakened, was the same as usual. The pain was not relieved.

The other was 33 years of age, and was subject to pain in the cardiac region, extending through to the back and down the left arm as far as the elbow. Pulse was 92, small and weak. There was visible pulsation in the arteries of the neck, and increased impulse was felt on pulsation. But the apex of the heart was normal in position, and the cardiac dulness was found to be only two inches and a half transversely. On auscultation, a loud, blowing, musical murmur (the *time* of its occurrence is not stated) was heard all over the cardiac region, loudest over the third rib, about an inch to the inside of the left nipple.

The pain, one day, being severe, it was thought that the nitrite of

amyl might relieve him. Five drops were put on a towel, and were given by inhalation. One minute after, his face became flushed, he stared, and, with open mouth, he turned his head from side to side in an anxious manner. Then a paroxysm of cough, to which he was subject, supervened, which was more than usually severe. The expirations of which the cough consisted became gradually shorter, until he was left motionless, his mouth open, his face and neck greatly congested, and his jugular vein standing out as thick as one's little finger. He recovered after a few seconds, cold water having been dashed upon his face and neck, and fell back upon his pillow exhausted. The angina was relieved, the paroxysms of cough returned at intervals of several hours, when the patient fell asleep. He woke in six hours, and found the angina pain just as it was before the inhalation. This patient died a month or two afterwards, never rallying after a paroxysm of coughing. On autopsy, the left phrenic nerve was found to be implicated in a small tumor, the size of a filbert, situated in part of the root of the left lung, and composed of a bronchial gland enlarged and infiltrated with carbonaceous matter. On microscopic examination, the nerve tubes were found continuous at the affected part of the nerve; the substance was slightly granular; the right phrenic was natural. The vagi and recurrent nerves, on both sides, were natural; pericardium was adherent throughout. There was an aneurism of the aorta, opening half an inch above the aortic valve, which obstructed the pulmonary artery. The aorta was atheromatous throughout the arch, and for some distance down.

[To be concluded.]

SEVERE INJURY TO THE THROAT; RECOVERY.—A married woman, aged 24 years, attempted to commit suicide by cutting her throat with a razor, and, with a determined, sweeping stroke of the instrument, severed completely the tissues of the neck in front of the cervical vertebra. The wound extended from the sterno-cleido-mastoideus muscle of the right to the corresponding muscle of the left side, the external jugular veins on both sides being divided, and the carotid arteries laid bare. The trachea and œsophagus were both cut across above the *pomum Adami*. The razor, having been directed upwards, severed completely the integument above the glottis and epiglottis, and passing over the *os hyoides*, just beneath the base of the tongue, detached these important organs from the larynx and pharynx. The woman remained in a very critical condition for twenty-four hours, at the expiration of which time she began to rally. The power of speech was lost, nor was she able to take any nourishment by the mouth, all fluids taken passing out of the wound in the throat. From some cause, not explained in the report of the case, all efforts to introduce a stomach tube were unsuccessful, and nutrient enemata were, therefore, resorted to, by means of which life was sustained for eighteen days. It was now found that a portion of the fluids taken into the mouth did pass into the stomach, and, in the course of eight or ten days, deglutition had so much improved as to permit solids to enter the œsophagus. This process was successfully performed, however, only when she assumed the recumbent posture. At this stage, the enemata were dispensed with. Health and strength gradually improved, until the ingesta found their way readily into the stomach even when the woman was in the erect posture. The injury to the vocal apparatus was also sufficiently repaired to allow her to employ again her voice, though her articulation and enunciation were, at last accounts, very imperfect.—D. W. HAMMOND., in *Transactions of the Medical Association of Georgia for* 1873.

Reports of Medical Societies.

ESSEX NORTH DISTRICT MEDICAL SOCIETY. JOHN CROWELL, M.D., SEC'Y.

ANNUAL meeting, May 6th. The first business in order was the election of officers. (The list of those elected was published in the last number of the JOURNAL.)

Dr. Martin Root, of Byfield, declined further service as Secretary and Treasurer, having served in that capacity thirty-one years, during which long period of faithful service he had only *twice* failed to be present at the meetings of the Society.

The following resolution was unanimously adopted:—

"*Resolved*, That Dr. Martin Root, by his untiring industry, fidelity and faithfulness as Secretary and Treasurer of this Society for the term of thirty-one years, has received our entire confidence and esteem; and, as a slight testimonial of this feeling, we authorize the treasurer to pay over to him the sum of fifty dollars, from the funds of the Society, for his own use."

Dr. Jeremiah Spofford resigned his position as Commissioner on Trials, and the following resolution was unanimously adopted:—

"*Resolved*, That the thanks of this Society be tendered to Dr. Jeremiah Spofford for the faithful discharge of his laborious duties as Commissioner on Trials during the existence of that Board.

An interesting and exhaustive discussion ensued, on the *Treatment of Scarlatina*, after which Dr. Garland, of Lawrence, reported the following case of *Fracture and Dislocation of the Neck*:—

March 12, 1874, Mrs. N., aged 45, a large, muscular lady, residing in Lynn, Mass., fell down stairs (eleven eight inch steps), striking upon the top of her head. Those who came to her assistance exclaimed, "she has fainted." Mrs. N. replied, "I am not faint, but I cannot move"; she told them that when she struck the floor she saw a vivid flash of light, and then for a few seconds was left in utter darkness, but did not lose her consciousness. Any attempt to move her gave great pain in her neck, and she gave directions how to hold her head, as several men were taking her up stairs to her bed. A *homœopathic surgeon (?)* was called, who, after an examination, declared there was "no injury of the spine, as the bones were all intact." On the 14th, she was removed from Lynn to Lawrence, on a stretcher procured at the Massachusetts General Hospital. On reaching Lawrence, she was carefully placed in bed, and so adjusted as to relieve pain of neck as much as possible. An opiate was given, and no examination made at that time, except to ascertain that there was complete paralysis of the body and limbs. There seemed to be a slight reflex action on pinching the arms near the shoulder, but this was doubtful, and there was no positive sensation below the fourth rib, and no natural feeling below the neck. The catheter was passed, and she was left for the night.

On the 15th, a careful examination was made by Dr. Chamberlain and myself, when crepitation was felt at a point below the middle of the neck, with slight depression, together with unusual mobility of the head in all directions. Extension from the head was then made, when a snap was heard and felt by those assisting, followed with relief

of pain, particularly at the upper part of the neck. She was placed in a horizontal position, and just enough extension made from the head to keep it in place and to relieve suffering. The respiration was almost all diaphragmatic. Pulse 80, and quite full. Took nourishment, milk, &c. Intellect perfect. No dejection since injury.

On the 16th and 17th, much the same, except the respiration, which, on the 17th, became less frequent and wholly diaphragmatic and labored. Mind clear as a bell. Articulation and deglutition good. Had an almost sleepless night, and, in the morning of the 18th, her neck was more swollen, and she complained of great pain, extending up into her head. Breathing much labored and gasping. Mind perfect. Pulse 84, and good. She continued to fail till 5, P.M., when she died. She conversed with friends a few moments before breathing her last.

The autopsy was not made until Saturday, the 21st, and was necessarily very brief, as the body was kept on ice up to a short time before the funeral service. The integuments were divided, and the cervical vertebræ exposed. A comminuted fracture of the fifth vertebra was found, together with a complete separation of the atlo-axoid ligament from the arch of the atlas. Notwithstanding this, the patient lived six days, retaining her intellect perfectly, and adding one more to the limited number of persons who have survived for a number of days after fractures and dislocations of the neck.

Dr. E. P. Hurd, of Newburyport, read a learned and concise paper on the "*Germ Theory of Disease*," which was listened to with marked interest. The writer reviewed the various theories presented by scientists, and gave an accurate analysis of each, with the more advanced ideas in regard to the ultimate course of disease.

CONSISTENCY A RARE JEWEL.—In the last number of the *Archives of American Medicine and Surgery* (an Eclectic periodical), the editor takes occasion to animadvert upon the employment of *buncombe* in medical meetings, but in the very same number is printed a report of the progress of what is termed "sanative medication," in which the writer, sublimely indifferent throughout to the ordinary rules of grammar, closes a spread-eagle harangue in the following strain:—

"Allopathy hears the muttering sound, the deafening peals approach nearer and still nearer, and soon the lightening *(sic)* shafts of the people's wrath, indeed they are now rending asunder their antiquated dogmas. Already they tremble and hasten to throw up bulwarks, but Science, in her onward march, heeds them not. Co-workers in this glorious cause, let not their preparations for defeat induce you to slacken your energies—press forward and victory is ours."

THE WINTER IN EUROPE.—European journals and correspondents agree in representing the past winter as unusually severe, and invalids who have thought to find a warm, genial climate in Southern France and Italy have been grievously disappointed. We are informed by private letter from Rome, that the surface of the ground in that city has been whitened by snow as late as the eleventh of March, a phenomenon that has not been observed for thirty years previous. From along the entire coast of the Mediterranean, according to the *British Medical Journal*, complaints are heard of inclement weather, while in Cairo, the piercing winds and the clouds of dust and sand, combined with the comfortless hotel existence, have made the winter particularly distressing to those suffering from chest diseases.

Bibliographical Notices.

Sixtieth Annual Report of the Trustees of the Massachusetts General Hospital. 1873.

THERE are few charitable institutions in this country whose record of good work extends over so long a term of years as that of the one whose annual report now lies before us. The charities of Boston have increased one hundred fold during the half century which has elapsed since this Hospital first opened its doors to the sick. Notwithstanding that the claims of so many are constantly and conspicuously displayed before the public eye, its reputation has ever been that of one of our leading charitable institutions, if not *the* leading one of Boston. It is not among Bostonians alone, however, that this reputation maintains, but there is scarcely a town or village in all New England where its name is not well known and remembered with gratitude and respect. The consequence of this has been that the institution has grown to such dimensions that the annual expenses of the Hospital and Asylum now exceed the sum of two hundred and fifty thousand dollars; and, although of late years legacies and donations have been numerous and of generous dimensions, the income has usually been insufficient to meet the large expenses, and this year the deficit amounts to nearly twenty thousand dollars. In this connection, the remarks of Mr. Stevenson, the Treasurer, delivered last February, at the State House, before the committee on just and equal taxation, are of interest. It having been proposed to levy a tax upon this institution, Mr. Stevenson appeared before the committee to remonstrate, and there forcibly pointed out "that the institution needs a million of dollars more of income-producing property than it now holds, in order to continue its present work of beneficence without enlarging its sphere." It is pleasant to learn that, in the few months that have elapsed since this appeal was made, the Hospital has been the recipient of a most munificent bequest of two hundred thousand dollars from the widow of the late Frederick W. Lincoln. It should not be forgotten that a large sum is still needed to furnish an income sufficient to meet the annual expenses; and although a Hospital Sunday may call forth a generous response from the public, the contribution from this source will prove little more than a drop in the bucket.

During the summer, two new buildings of iron and wood, connected by covered corridors with the main buildings, were begun and are now completed. These buildings are to be called the Jackson and the Warren, in memory of the valuable services of the late Drs. James Jackson and J. Mason Warren. They are built on a different plan from any hospital buildings in this part of the world, and a wood-cut is given in the report showing their form and appearance. We are glad to notice the adoption of the one-story plan of building, and hope to learn that the good result of a more perfect system of ventilation will have a practical demonstration.

Those who remember the graceful old elms which adorn the hospital garden, will be glad to learn that this part of the grounds is about to be rescued from the neglected state in which it has been allowed to remain, and the dreary waste in the western portion is to be "reclaimed," and made not only available to convalescent patients, but also to serve an ornamental purpose, an element which hitherto it has apparently not been deemed necessary to introduce.

The one-horse ambulance in use since the middle of July last, has proved to be far from a "one-horse affair." "Its great usefulness is beyond question; it is not called for in cases of accident, but is in frequent use to transport cases of sickness unsuitable for conveyance in other vehicles."

The report of the McLean Asylum we commend to the perusal of those who lend a willing ear to frequently repeated slanders on institutions of this class. The good work accomplished, unfortunately perhaps, does not partake of the same sensational character.

We append a list of the present officers of the institution:—

President.—Edward Wigglesworth.

Vice President.—Nathaniel Thayer.

Treasurer.—J. Thomas Stevenson.

Secretary.—Thomas B. Hall.

Trustees.—Samuel Eliot, James M. Beebe, E. Francis Bowditch, Charles R. Codman, Charles H. Dalton, Edmund Dwight, George E. Ellis, George S. Hale, Samuel G. Howe, Henry P. Kidder, Robert H. Stevenson, Samuel D. Warren.

Resident Physician.—Norton Folsom, M.D.

Visiting Physicians.—George C. Shattuck, M.D., Francis Minot, M.D., Calvin Ellis, M.D., Samuel L. Abbot, M.D., Benjamin S. Shaw, M.D., Geo. G. Tarbell, M.D.

Visiting Surgeons.—Henry J. Bigelow, M.D., Henry G. Clark, M.D., Samuel Cabot, M.D., George H. Gay, M.D., Richard M. Hodges, M.D., Algernon Coolidge, M.D.

Physicians to Out-patients.—David H. Hayden, M.D., William L. Richardson, M.D., Edward N. Whittier, M.D., Henry Tuck, M.D.

Surgeons to Out-Patients.—Charles B. Porter, M.D., John Collins Warren, M.D., Henry H. A. Beach, M.D.

Physician to Out-patients with Diseases of the Skin.—James C. White, M.D.

Physician to Out-patients with Diseases of the Nervous System.—James J. Putnam, M.D.

Physician to Out-patients with Diseases of the Throat.—Frederick I. Knight, M.D.

Ophthalmic Surgeon to Out-patients.—Oliver F. Wadsworth, M.D.

Dentist.—Charles Wilson, M.D.

Microscopist and Curator of the Pathological Cabinet.—Reginald H. Fitz, M.D.

Chemist.—Edward S. Wood, M.D.

Artist.—Henry P. Quincy, M.D.

The officers of the McLean Asylum for the insane, located at Somerville, are as follows:—

Superintendent.—George F. Jelly, M.D.

1*st Assistant Physician.*—James H. Whittemore, M.D.

2*d Assistant Physician.*—Charles E. Woodbury, M.D.

A Treatise on Pharmacy, designed as a Text-book for the Student and as a Guide for the Physician and Pharmacist; containing the Officinal and many Unofficinal Formulas and numerous Examples of Extemporaneous Prescriptions. By EDWARD PARRISH, late Professor of Theory and Practice of Pharmacy in the Philadelphia College of Pharmacy, &c. &c. Fourth Edition. Enlarged and thoroughly revised, by THOMAS S. WIEGAUD. Philadelphia: Henry C. Lea. 1874.

THIS new edition of a well-known work, addressed both to the physician and pharmacist, presents a vast amount of information useful to each profession.

Of its accuracy in a strictly pharmaceutical point of view, we do not take it upon us to speak, but we understand that, in the hands of the present editor, many mistakes have been corrected and the work brought up to the present status of the art. Some parts have been almost entirely re-written.

There is hardly any information needed by the pharmacist in the practice of his art, or by the country practitioner who may be compelled to compound his own prescriptions, and who wishes to do so elegantly as well as rapidly, which will be sought here in vain, while much of it might profitably be studied, even by the physician who has a well-appointed pharmacy at the nearest corner.

We find lists of an outfit of drugs for a physician's dispensary, which have apparently not undergone the same revision with the rest of the book, since

we notice half a pint of ether, with "letheon" in parentheses, to go with four ounces of calomel, one of tartar emetic, and one of gamboge.

"Only one pennyworth of bread to such an intolerable deal of sack!"

These belong to a "list which may be regarded as the least on which a physician who is obliged to dispense his own prescriptions can commence practice."

The chapter on the writing of prescriptions is somewhat amusing, and contains full directions, vocabulary, grammar and all, for the construction of a fine old full-blooded Latin prescription, a piece of ancient literature which, we take it, few apothecaries set their eyes upon from one year's end to the other. The author wisely remarks, and we think Professor Lane would agree with him, that the "language used in prescriptions must be regarded as distinct from the Latin taught in schools."

These, however, are not the only points which the physician would do well to heed. Ambiguous abbreviations, flourishing chirography and deficient or indistinct directions are properly deprecated. "The first process, on receiving a prescription to be compounded, is to read and thoroughly to understand it."

To the physician, this book is instructive and full of suggestions; to the pharmacist, a mine of information. We are happy to say it does *not* contain a "list of diseases, with their remedies."

The New Chemistry. By JOSIAH P. COOKE, JR., Erving Professor of Chemistry and Mineralogy in Harvard University. New York: D. Appleton & Co. 1874. Pp. 326. International Scientific Series.

THIS work consists of the printed notes of a course of lectures delivered by the author before the Lowell Institute, in Boston, in the Fall of 1872, at which time many of the readers of the JOURNAL had the pleasure of hearing them, and at the same time of witnessing the experimental illustrations, without which the mere rehearsal of the facts is comparatively dry and uninteresting. In these thirteen lectures, the distinction between the old and new chemistry is explained in so clear a manner, that it can easily be understood by a non-professional person. In a course of popular lectures we do not expect to find discussions of all of the technical features of the new system, nor do we find them in Prof. Cooke's work, but the more important points, all which are necessary to explain the development of the new chemistry, are considered and fully illustrated.

The first three lectures are devoted to an explanation of the exact meaning of the word "molecule," and the enunciation of the law of Avogadro, which is that "equal volumes of all substances, when in the state of gas, and under like conditions, contain the same number of molecules." The development of the new chemistry from the above law is logically traced, and clothed in such plain language that the careful reader cannot fail to understand clearly the new nomenclature and the new formulæ. These three lectures are chiefly physical, the molecule being the smallest amount of matter with which the physicist has to deal.

In the next three lectures, we find the atomic theory fully developed, the difference between the molecule, the physicist's unit, and the atom, the chemist's unit, being explained. The experiment showing the analysis and synthesis of water, is described to illustrate this theory. The explanation of chemical changes, and the method of expressing these changes by symbols and chemical notation, is made very clear and simple. In the seventh and eighth lectures, this subject is continued, the writing of reactions is described, and the different kinds of reactions are classified into the analytical, synthetical and metathetical.

The ninth and tenth lectures are devoted to the study of combustion, the latter containing an explanation of the difference in the burning of gunpowder and nitro-glycerine, the different results obtained by the explosion of these two substances depending upon the difference in their molecular structure.

The last three lectures explain what is meant by "quantivalence," and the structure of compound molecules. In the twelfth lecture, the electro-chemical theory is discussed. This includes an explanation of the difference between those substances which are termed acids, bases and salts, which the beginner in chemistry, especially if he has been taught the old nomenclature, finds it so difficult to understand; and those of our busy practitioners who learned to express their chemical compounds and changes according to the terms of the old chemistry, and find it hard to recognize familiar substances in their new dress, will find in this work of Prof. Cooke all the information necessary to enable them to change their formulæ from the old to the new.

W.

The Student's Guide to Surgical Anatomy. By EDWARD BELLAMY, F.R.C.S. Philadelphia: Henry C. Lea. 1874. Pp. 300.

WE fully agree with the author in his opinion that there is room for a book of this nature. It is not a dissector, strictly speaking, nor is it a surgical anatomy, but a work on what, as the author says, might be termed applied anatomy—a branch of which American students, and we suspect English ones too, are very ignorant. Important as descriptive anatomy is, we think it much to be regretted that more time cannot be given to the study of the body as a whole. It is of little real advantage to the student to be able to give the origin and insertion of muscles if he is ignorant of their relations to bones, vessels and nerves, and to one another. It has been too much overlooked that a beautifully dissected subject for class demonstration is in about as unnatural a condition as it can well be, and gives not only an imperfect but often a false idea of the structure of a man when he is walking the street. The book before us is just what is wanted under these circumstances; by which we do not mean that it is a perfect or an elaborate treatise on topographical anatomy, but that it is well written, suggestive, and likely to turn the thoughts of the student in the direction of his deficiencies. The text is clear and the figures mostly good. Though we somewhat regret that the author does not go more into details, on the other hand we recognize the advantage of a small book. By way of criticism, we may observe that the sesamoid bones of the metacarpo-phalangeal joint of the thumb should at least have been mentioned, for they constitute the real difficulty in reducing a dislocation. The author speaks of the difficulty, but not of its true cause. There is a serious blunder, doubtless owing to careless proof-reading, in the account of the anatomy of the parts concerned in Lisfranc's amputation. "The joint of the third with the scaphoid is almost transverse; that of the fourth is curved, and that of the fifth with the cuboid is doubly oblique." We have no means of knowing whether the word "third" refers to a metatarsal or to a cuneiform bone, but in either case the passage is absurd. We regret that it should be necessary to remark that there is no verb "to tense." These and some other errors will doubtless disappear in a second edition, which we hope will appear shortly, for the book is a good one and deserves success.

T. D. JR.

BOOKS AND PAMPHLETS RECEIVED.

Seventh Report of the Medical Staff of St. John's Hospital. Lowell. 1874. Pp. 7.

Boylston Medical Society of Harvard University. Catalogue. March, 1874. Pp. 36.

The Conditions of the Conflict. Oration before the Medical Society of the County of Kings, Brooklyn, N. Y. By Alexander Hutchins, M.D. 1874. Pp. 32.

The Channing Home. Report No. 6, for the year ending April 1st, 1874. Boston. Pp. 11.

On the connection of the Throat and other Diseases. By S. Elsberg, M.D. (From the Medical Gazette, 1870.) Pp. 24.

Boston Medical and Surgical Journal.

Boston: Thursday, May 21, 1874.

By the invitation of the Boston Society for Medical Observation, Dr. Brown-Séquard delivered a lecture on the case of the late Hon. Charles Sumner before that Society, and many invited guests, on the evening of May 14th. Dr. H. I. Bowditch presided. The lecturer said that he had watched the case closely since the summer of 1858, and had a large number of letters concerning it. Apart from personal and political considerations, he thought the case one of great medical interest. We shall endeavor to give, first, a condensed account of the case, as related by Dr. Brown-Séquard, and then his views and treatment of certain special points.

On the 22d of May, 1856, Mr. Sumner, while sitting at his desk in the Senate chamber, was struck several severe blows on the head with a cane. He became insensible and lost much blood. He slowly rallied, and when, ten or twelve days after the occurrence, he was seen by Dr. Perry, of Boston, who happened to be in Washington, he was suffering from great weakness, pain in the lumbar region, and apparent loss of control over the legs, together with a sense of fulness in the head. He spent the summer in the Alleghany Mountains with some improvement, though walking was very difficult. The next winter he resumed his seat in the Senate, but, finding it impossible to attend to his duties, he, after a few days, went to Europe, returning in December, 1857. He experienced several relapses, and again sailed for Europe in May, 1858. He went at once to Paris to consult Dr. Brown-Séquard. He apparently was worse than at any time since the accident. Intense pain in the head followed the slightest mental exertion. Walking consisted of pushing the legs alternately along the ground without raising them, but it was discovered that this was due solely to the pain which raising them would cause, and not to any paralysis. There were two points on the spine which were exquisitely tender, and more so then than ever before. One was situated at the junction of cervical and dorsal regions, the other at that of the dorsal and lumbar. The lecturer stated that in these places the two points of the æsthesiometer can rarely be recognized when less than two inches apart, but that in this case they were distinguished when only one line distant from each other.

The sensation of heat and cold and of pain were also increased at these points. There were no cerebral symptoms that could not be referred to the influence of the vaso-motor nerves. Six moxæ were applied to the spine in the course of six weeks, three to each tender

spot. The patient refused chloroform, understanding that the counter-irritation would be more effectual without it. The result was very satisfactory, even the first application being followed by a marked diminution of the hyperæsthesia. He passed the summer in Savoy, with great relief of the head symptoms, and was able to walk very fairly. In November, Dr. Brown-Séquard again saw Mr. Sumner; this time together with Prof. Trousseau and Dr. George Hayward. There was manifestly congestion of the membranes of the cord, and, perhaps, of the lower part of the cord itself. The most distressing symptom was one which had shown itself some time previously, but was now much increased, namely, the necessity of rising frequently during the night to empty the bladder. Dry cupping was of some service, and in the following spring and summer he derived additional benefit from sea-bathing. Mr. Sumner then returned to America. He was weak, with a feeble pulse, suffering more or less from the last-mentioned trouble, and had experienced one or two attacks of angina pectoris; otherwise, he was well. Dr. Brown-Séquard saw him several times between 1859 and 1872, during which period he enjoyed tolerable health, though not free from these symptoms. He suffered relapses due to mental disturbance from political causes, the chief of which were Mr. Motley's recall from Vienna, the San Domingo affair, the removal of his brother-in-law from a government office in California, and the events attending the nomination of Mr. Greely for the presidency. The trouble with the urine was especially marked, it being sometimes necessary for him to rise from twenty to thirty times during the night. Since last summer, Mr. Sumner had been pretty well, and he went to Washington for the last time in good condition.

The particulars of the Senator's last hours are pretty generally known, so that they need not be given here in detail. The lecturer read part of a letter from Dr. Johnson, of Washington, giving some account of them. The day before death, there was a severe attack of angina, which morphia failed to relieve. Collapse soon supervened, which was ineffectually combatted by stimulants internally, and by sinapisms. The lungs were congested, and there was some expectoration of bloody mucus. For six hours before death, no pulse could be felt at the wrist. Only twenty minutes before breathing his last, the patient asked for morphia to soothe the feeling of intense weariness which oppressed him, but yielded calmly to the reasons which were given for refusing it. Just before the end, there was an attack of vomiting, followed by a general spasm of rigidity, which closed the scene.

Two days after death, the face, neck, shoulders and arms were greatly swollen, and putrefaction was very rapid. The friends of the dead Senator appear to have behaved very absurdly concerning an

autopsy, which was not made till the body had reached Boston, when it was too late to examine the cord. There was no disease of the brain. The walls of the left ventricle of the heart were thin, and the coronary artery supplying them much diminished in size, and considerably ossified. The bladder was healthy.

As to the general purport of the case, Dr. Brown-Séquard thought that there were two sprains of the spine. He held that the upper one was caused by the blows on the head, and the lower by the violent effort which Mr. Sumner made to rise during the assault. He thought that the angina was probably an indirect result of the injury, though this theory did not admit of demonstration.

The lecturer discussed, at length, two of the most prominent symptoms, viz., the bladder trouble and the angina pectoris. The former occurred during sleep, whether by night or by day; it was accompanied by a spasm of the sphincter of the bladder, and he thought was due to congestion of the cord. Many remedies were tried. Atropine, injected subcutaneously, in doses of, at first, $\frac{1}{3\frac{1}{5}}$ gr. and later $\frac{1}{2\frac{1}{5}}$ gr., had a good effect, but produced strangury, which was relieved by adding morphia. The bromides were of little service. Hyoscyamine associated with canabis indica, of which very large doses were finally given, was best of all.

Dr. Brown-Séquard remarked that angina was by no means necessarily a symptom of disease of the heart, but that it might depend on many disturbances of the system. The treatment had generally aimed at increasing the general strength, but local counter-irritation and many drugs had been employed. At times, narcotic injections had been given daily.

The lecture was listened to with the greatest attention, and at the close Dr. Bowditch thanked Dr. Brown-Séquard in the name of the audience.

The Hospitals.

MASSACHUSETTS GENERAL HOSPITAL.

(Wednesday and Saturday, May 6 and 9, 1874.)

OPERATIONS were performed in the following cases:—Deformed Knee, Tumor of Nose, Deformity of Mouth, Tumor of Neck. During the week, Stricture of Urethra with Retention of Urine, Railroad Injury of Hand and Wrist, Hæmorrhoids, Injury of Foot.

Deformed Knee—in a boy twelve years old, due to contracted ham-strings; the tendons of the latter were divided, and, after two months of treatment with orthopædic apparatus in the hospital, he was allowed to go home, two weeks ago, partially relieved. Since then, he has increased the contraction by using the limb. Under ether, the leg was straightened without tenotomy, and afterwards bandaged to a straight ham-splint.

Tumor of Nose.—An ulcerating and painful growth of the size of a white

bean; located in the depression between the tip and ala of the nose, in a woman fifty-five years old. Excised by Dr. Clarke.

Deformity of Mouth—in a middle-aged woman, caused by salivation following accidental administration of calomel some months since. This had resulted in a loss of the teeth and of the alveolar border of the lower jaw; and in an ulceration so extensive that the subsequent cicatrization had tied the lower lip and tongue down to the lower jaw. The saliva constantly dribbled from the corner of the mouth, and eating and speaking were seriously interfered with. The lip was freely dissected away from the cicatrix and jaw, and, by means of a lozenge-shaped incision, the most prominent portion of the cicatrix was excised. The tongue was then loosened, so that the tip could be made to touch the roof of the mouth. The two sides of the incised lower lip were then carefully adjusted and secured in apposition by sutures.

Tumor of Neck—congenital, in a baby ten months old. It was as large as a medium-sized orange, of somewhat irregular shape, firm consistency, filling the whole of one side of the neck. A semi-lunar incision of four inches was made through the skin and platysma, the fascia divided on a director, and the more superficial part of the growth exposed. Its firm lateral adhesions were rapidly divided, and the bleeding vessels secured as they were cut. The deepest attachments involved the fascia overlying the carotid artery and internal jugular vein, and extended upward into the submaxillary triangle and forward to the larynx. After the dissection was completed, the carotid could be distinctly seen pulsating at the bottom of the extensive wound; the latter was closed by sutures. The tumor, on section, was largely cystic, but in part solid, and of a very composite character, containing fatty, bony and cartilaginous growths. Its microscopical appearance will be described in a future report.

Stricture of Urethra and Retention of Urine—in a man thirty-eight years old. Three years ago, he had gonorrhœa. Symptoms of stricture had existed a year. He entered the hospital with retention, the bladder so much distended as to reach the umbilicus, and a badly lacerated urethra from protracted and ill-devised attempts to relieve him. The number of false passages, the extravasation of blood into the corpora cavernosa and the œdematous condition of the parts, made any attempt to enter the bladder by the urethra impracticable; it was therefore punctured over the pubes, and two quarts of bloody and foul-smelling urine withdrawn by the aspirator.

Railroad Injury of Hand and Wrist—in a man twenty-seven years old. The bones were crushed and the soft parts extensively bruised and lacerated. Dr. Clarke amputated at the junction of the middle and lower thirds of the forearm by the flap method.

Hæmorrhoids—in a woman. Tied.

Injury of Foot—in a boy of fifteen years, caused by the paper-cutter used in a bookbindery. The phalangeal bones were crushed and the soft parts, on the dorsal and plantar surfaces, chopped and lacerated nearly to the middle of the foot. Amputation through the metatarsal bones was performed.

H. H. A. BEACH.

BOSTON CITY HOSPITAL.

THERE were no operations at the City Hospital last Friday. During the week, besides a number of smaller ones, were the following:—

1. *Amputation of Thigh.*—This was upon a boy, who had been in the hospital for three weeks for a railroad injury, causing sloughing of the soft parts and compound fracture of the upper part of the leg.

2. A woman, who had had a rusty nail thrust into her palm, entered the hospital some time ago with cellulitis extending to the elbow; gangrene followed, and the arm was amputated above the condyles.

3. *Ligature of Radial and Ulnar Arteries* for a glass cut of the palm.

All the above by Dr. Homans. W. P. BOLLES.

Correspondence.

Paracentesis Thoracis.

Pawtucket, R. I., May 11, 1874.

Messrs. Editors,—In No. xiv. of *The American Journal of the Medical Sciences*, there is a letter by Samuel A. Cartwright, M.D., dated Natchez, 1830, containing "remarks on a contrivance for draining the thorax of liquids, excluding, at the same time, the admission of air," with the statement that three cases of hydrothorax had been successfully treated by this mode of maintaining the opening. It is exactly the same device described in the Journal of May 1st ult. Some time since I called Dr. Bowditch's attention to it, believing it a valuable contrivance. Whether this gentleman has tried it, I cannot say. It seems, by Dr. Oliver's communication, that it is used quite generally in one of the London hospitals. An explanation of its merits is given in the letter I allude to, well worth the time to read, and, if not correct in every item, it is interesting to look back almost half a century and see how empyema was then viewed as a surgical case.

J. O. Whitney.

Neugebauer's Specula.

Boston, May 15, 1874.

Messrs. Editors,—Having recommended these specula, I feel it incumbent upon me to state that certain of those manufactured by Messrs. Codman and Shurtleff, of this city, are not perfectly adjusted to each other, and are, consequently, unserviceable. This firm request me to say that they will gladly give perfect instruments in exchange for any ill-fitting ones that may have been sold by them. I am very truly yours,

James R. Chadwick, M.D.

Obituary.

Dr. Jno. G. F. Holston, Sr.

At a meeting of the Zanesville Academy of Medicine, held Saturday, May 2, to take action in relation to the death of its late Fellow, Dr. Jno. G. F. Holston, Sr., which took place at Washington, D. C., May 1, 1874, the following resolutions were adopted.

That we, whose occupation has been to relieve human suffering, are reminded that the time must come when our places on earth shall be vacated. Therefore,

Resolved, That in the death of Dr. Holston, the Zanesville Academy loses one of its prominent members, and the profession at large an eminent physician and surgeon, of extensive professional and literary culture, ripe experience and accurate judgment; and society a warm-hearted, genial and generous member, whose life has been mainly devoted to the good of his fellow-beings.

Resolved, That we attend the obsequies of our deceased Fellow in a body.

Resolved, That we deeply sympathize with the family and relatives of the deceased.

Resolved, That the Corresponding Secretary transmit a copy of these resolutions to the family, the city Press, and the Medical Journals.

C. C. Hildreth, *Chairman*.

A. E. Bell, *Secretary pro tem.*

Medical Miscellany.

DR. SHARPEY has resigned the chair of physiology, which he has held at University College, London, since 1836.

FORMULA FOR TASTELESS COD-LIVER OIL.—℞. Ol. morrhuæ, ʒij.; spts. lavend. comp., ʒi.; spts. vini Gallici, ʒi. M.

MEETING OF THE CENSORS OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.—We would call the attention of those wishing to enter the Massachusetts Medical Society to the fact that, owing to the proposed alterations in the by-laws, the meeting of the Censors advertised for June 28th will probably be the last before September.

A NEW PRIZE.—Dr. Dawson, late editor of the *American Journal of Obstetrics*, announces his intention of offering a yearly prize of one hundred and fifty dollars in gold for the best essay on some subject to be given out in that *Journal*. The subject for the first year is, "*Congenital Deformities, and Diseases depending on Maladies of the Uterus or Membranes*," and essays are to be sent, in the usual way, to Wm. Wood & Co., New York, on or before April 15th, 1875.

SILICATE OF SODA IN GONORRHŒA.—At the Roosevelt Hospital, injections of the silicate of soda have been recently employed in the treatment of gonorrhœa, in both acute and chronic stages.

℞. Silicate of soda, 20 grains;
Water, 8 ounces. M.

The injections are given three times a day, with satisfactory results. No other treatment is combined with it.—*The Medical Record.*

DEATH OF AN INFANT FROM THE APPLICATION OF AN ACETATE OF LEAD LOTION TO THE NIPPLES.—M. Bouchat mentions the case of a lady who, having used a lotion called *Eau de Mad. Delacour*, a favorite quack remedy in Paris for sore nipples, omitted to wash it off before putting the child to her breast. The child was shortly after seized with violent colic, and died in a few days with all the usual symptoms of lead-poisoning.—*Gazette des Hôpitaux.*

LACTATION RENEWED IN AN ANTIQUATED MATRON.—A married woman, sixty years old, the mother of two children, whose mammæ had been completely shrivelled for twenty years, undertook the care of a sickly infant, the child of a deceased step-daughter. As the child was very fretful at night, she was accustomed to put the nipples of her dried up mammæ to the mouth of the infant, in order to quiet it. In the course of three weeks, to the surprise of the old lady, her breast began to expand, and soon yielded an abundance of milk, more than enough for one child. The flow of milk continued unabated until the child was old enough to wean.—T. A. DARGAN, M.D., *Charleston Medical Journal*, April, 1874.

RUPTURE OF THE VAGINA, WITH PROTRUSION OF THE BOWELS.—A woman, living in Leipzig, sixty-three years old, mother of thirteen children, had suffered for thirty years with falling of the womb. The organ invariably came down on standing, sitting or walking, forming a tumor about the size of a child's head, but went up without any assistance, when she lay down. It appears that whilst she was ascending the steps of the village well with a weight on her back, the womb prolapsed, and as she endeavored to forcibly replace it, she felt something give way, and immediately the bowels protruded.

Eight hours afterward, she was found, by Dr. Fepling, in a state of collapse, with the small intestines protruding from the vulva, forming a mass about as large as a man's head. The intestines were cool to the touch, showed no signs of peristaltic movement, and were of a purple color. All

attempts at reduction proved ineffectual, and the woman died from shock, eleven hours after the accident.—*Archiv für Gynækologie*, vol. v., part i., 1873.

THE HAMPDEN DISTRICT MEDICAL SOCIETY has chosen the following officers:—

President.—Dr. W. J. Sawin, of Chicopee Falls.
Vice President.—Dr. H. G. Stickney.
Secretary.—Dr. G. S. Stebbins.
Councillors.—Drs. S. D. Brooks, Cyrus Bell, A. R. Rice, M. Calkins and G. S. Stebbins.
Censors.—Drs. E. M. Pease, Charles P. Kemp and David Clark.

NORFOLK DISTRICT MEDICAL SOCIETY.—At the annual meeting, at Hyde Park, May 13th, the following officers were elected for the ensuing year, 1874-75:—

President.—Dr. Robert T. Edes.
Vice President.—Dr. Silas E. Stone.
Secretary.—Dr. A. H. Nichols.
Treasurer.—Dr. J. S. Green.
Librarian.—Dr. D. S. Fogg.
Councillors.—Drs. R. Amory, G. J. Arnold, J. W. Chase, H. Blanchard, B. E. Cotting, W. C. B. Fifield, F. F. Forsaith, C. C. Holmes, J. Stedman, S. E. Stone, C. C. Tower.
Censors.—F. W. Goss, W. B. Trull, C. C. Tower, G. Faulkner, E. T. Williams.
Commissioner on Trials.—Dr. Robert Amory.
Committee on Supervision.—Drs. W. S. Everett, B. Cushing.

NOTES AND QUERIES.

STAT UMBRA.

"IT would appear that a good thing was never so badly managed in Boston as were the arrangements for Hospital Sunday. Somebody fearfully blundered about the details."—*Boston Transcript*, May 14, 1874.

The truth is, that the scheme did not approve itself to the "sober second thought" of the regular profession, nor to those, generally, connected with the large and really useful hospitals, one of the largest of which, and as needy as any, was wholly ignored. In fact, it was started in the interests of weakly or quackish enterprises. It has failed of good elsewhere. Let us have no more of it. VERITAS.

DIED,—At Newburyport, 17th inst., Thomas Sparhawk, M.D., formerly of Amesbury, 67.—At Williamsburg, 16th inst., by the disastrous flood in that neighborhood, E. M. Johnson, M.D., 35.

MORTALITY IN MASSACHUSETTS.—*Deaths in sixteen Cities and Towns for the week ending May 9*, 1874.

Boston, 143; Worcester, 15; Lowell, 24; Milford, 7; Chelsea, 4; Salem, 6; Lawrence, 11; Springfield, 8; Lynn, 5; Fitchburg, 4; Taunton, 8; Somerville, 8; Fall River, 12; Haverhill, 4; Holyoke, 2; Pittsfield, 6. Total, 267.

Prevalent Diseases.—Consumption, 50; pneumonia, 36; scarlet fever, 24.

No deaths occurred in Newburyport.

GEORGE DERBY, M.D.,
Secretary of the State Board of Health.

DEATHS IN BOSTON for the week ending Saturday, May 16th, 159. Males, 94; females, 65. Accident, 3; abscess, 1; apoplexy, 1; anæmia, 1; inflammation of the bowels, 3; disease of the bladder, 1; bronchitis, 9; inflammation of the brain, 1; congestion of the brain, 1; disease of the brain, 6; cancer, 3; cholera infantum, 1; consumption, 35; convulsions, 6; debility, 2; dropsy of the brain, 2; drowned, 2; dysentery, 1; diphtheria, 1; erysipelas, 2; scarlet fever, 12; typhoid fever, 2; gangrene, 1; gastritis, 1; disease of the heart, 6; disease of the kidneys, 6; congestion of the lungs, 1; inflammation of the lungs, 7; marasmus, 2; old age, 8; paralysis, 3; pleurisy, 1; premature birth, 6; peritonitis, 1; puerperal disease, 3; remittent fever, 1; rheumatism, 4; scrofula, 2; syphilis, 1; suicide, 1; tabes mesenterica, 1; teething, 1; tumor, 1; thrush, 1; whooping cough, 4.

Under 5 years of age, 57; between 5 and 20 years, 17; between 20 and 40 years, 30; between 40 and 60 years, 25; over 60 years, 30. Born in the United States, 113; Ireland, 32; other places, 14.